Rationale: Acute-on-chronic liver failure (ACLF) is a life-threatening acute deterioration of a chronic liver disease with severe jaundice and hepatic encephalopathy. There are no cost-of-illness studies of the treatment of ACLF available. **OBJECTIVES:** To determine the average cost of the treatment of ACLF and testing of important clinical variables for their predictive value for the treatment costs. Methodology: Based on the sample of all ACLF-patients treated in a large German university hospital from 1999 to 2001 detailed cost of the initial hospital stay and a three year follow-up period were determined. Data on resource use were collected from hospitals patient files and internal statistics as well as by standardized interviews and questionnaires to patients and their treating GPs. Costs were calculated from a German health care system perspective and standardized to EUR of 2002. Additionally to age, sex, aetiology and severity of liver failure another 15 relevant clinical variables were tested in single and multiple regression analyses. **RESULTS:** A total of 69 patients with ACLF could be identified. Mean costs per patient were €21,058; €11,259 for the initial hospital stay and €9799 for the following 3 years. Biggest influence had treatment with artificial liver support systems. Other significant variables in the model were renal dialysis and aetiology of the disease. All other variables including sex, age, severity of ACLF and several laboratory parameter did not have a relevant influence on the costs. **CONCLUSION:** A straight and relatively simple method to identify the main cost drivers for ACLF-treatment is presented. The results are absolutely plausible from a clinical point of view and stable to variation of the model structure. The results underline the necessity to differentiate the reimbursement systems for hepatorenal syndrome or additional renal failure, artificial liver support and the aetiology of ACLF.

PGI13

THE IMPACT OF GASTROESOPHAGEAL REFLUX DISEASE ON WORK PRODUCTIVITY: A SYSTEMATIC REVIEW

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OBJECTIVES: Gastroesophageal reflux disease (GERD) is a chronic, potentially debilitating condition characterized by frequent and persistent heartburn and acid regurgitation. The objective of this study was to evaluate the effects of GERD on work productivity, defined as productivity loss due to absenteeism and reduced effectiveness while working (presenteeism). **METHODS:** Studies quantifying health-related work productivity loss in individuals with GERD were identified using systematic literature searches. Work productivity loss due to absenteeism was expressed as number of hours lost, and as the percentage of the total employed time. Presenteeism was expressed as number of hours lost, and as the percentage reduced effectiveness while at work. Overall productivity losses (absenteeism plus presenteeism) were valued in US dollars using the human capital method. **RESULTS:** Six publications covering five studies conducted in the USA, Canada and Sweden were eligible for inclusion. Reported work productivity losses among individuals with GERD ranged from 6% to 40%, and were primarily due to presenteeism (6%–40%) rather than absenteeism (<1%–6%). Work productivity impairment correlated with symptom severity, and was greatest in patients experiencing sleep disturbance due to GERD symptoms and lowest in GERD patients taking prescription medication. Acid-suppressive therapy improved productivity at work, especially in individuals with GERD-associated sleep disturbances. The mean overall productivity losses per employee with GERD were estimated at $51–$396 per week, assuming a 40-hour working week and average US wages. **CONCLUSION:** GERD has a substantial economic impact, primarily by impairing employee productivity while at work. The burden of lost productivity may be reduced by acid-suppressive therapy, especially in employees with nighttime symptoms of GERD.

PGI14

WORK ABSENTEEISM IN IRRITABLE BOWEL SYNDROME (IBS): MEASURING DAYS VS HOURS MISSED

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OBJECTIVES: To compare the accuracy of two absenteeism measures (days missed and hours missed) for inclusion in economic evaluations of IBS. **METHODS:** 135 IBS patients recruited from five US gastroenterology practices completed the Work Productivity and Activity Impairment questionnaire for IBS (WPAI:IBS), which assesses absenteeism with hours missed, and also completed questions about days and partial days missed. Days and partial days were considered to be the equivalent of 8 hours and 4 hours, respectively. **RESULTS:** 125 patients were employed, had complete data, and were included in the analysis. A total of 6.4% of patients reported missing days from work due to IBS in the prior 7 days, with an overall absenteeism rate of 1.8%; 28.0% of patients reported missing hours, with an overall absenteeism rate of 4.3%. Among those reporting hours missed, 42.9% missed less than 3 hours, 34.3% missed 3 to 5 hours, and 22.9% missed 8 to 30 hours. When days missed was used to measure absenteeism, 77.2% of patients missing hours and 60.7% of time missed due to IBS were not counted; when hours missed was reported, all patients reporting days missed were counted. Combining partial days missed with days missed increased the correspondence between those reporting days and hours missed, but considerably overstated absenteeism because partial-day absences were often less than 4 hours. Previous validation of the WPAI:IBS hours missed measure of absenteeism relative to measures of disease severity, verbatim responses and retrospective diaries, corroborates the inaccuracy of the days missed measure. **CONCLUSIONS:** Hours missed from work, not days missed, is a more accurate measure for capturing the partial-day absences characteristic of IBS patients. Other chronic disorders like IBS may exhibit a similar pattern of widespread absences of short duration, and that absenteeism may go undetected when days missed is the measure of absenteeism.

PGI15

MEDICAL RESOURCE USE AND DIRECT MEDICAL COST OF CHRONIC HEPATITIS C VIRUS INFECTION (HCVI) IN BRAZIL

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OBJECTIVES: In Brazil it is estimated that there are more than 3 million patients chronically infected with HCV, making this disease a major public health problem. HCVI leads to chronic liver disease states such as cirrhosis and the need for transplantation. There is little published data on the cost of HCVI in Brazil. The aim of this study is to investigate medical resource use and direct treatment costs for each state of HCV infection from the perspective of the private medicine payers in Brazil. **METHODS:** Three Delphi panels were performed, one with hepatologists, one with intensivists and another with oncologists in order to delineate practice patterns and to obtain resource utilization for routine treatment and monitoring, adverse event management and other clinical parameters representative

of community physicians management of HCV infection. Responses were obtained from six hepatologists, six intensivists and six oncologists from various centers in Brazil with experience of treating HCVI. **RESULTS:** The expected annual costs per each disease stage, not treated with antiviral medication, per patient were: R$1.069 for mild chronic hepatitis, R$1,277.00 for moderate chronic hepatitis, R$1,522.00 for compensated cirrhosis, R$15,932.00 for ascites, R$31,352.00 for refractory ascites, R$21,427.00 for variceal hemorrhage, R$106,922.00 for hepatic encephalopathy, R$20,884.00 for hepatocellular carcinoma, R$136,900.00 for liver transplantation, R$10,540.00 liver transplantation after the first year and R$789.00 for remission. **CONCLUSIONS:** These cost data can be used to model disease burden in Brazil. The costs increase dramatically in the more advanced disease health states. Probably, slowing the progression to these disease states may be cost saving. One USD = 2.57 Brazilian Reais at the moment of the study.

PGI16

GASTROESOPHAGEAL REFLUX DISEASE (GERD)—PREVALENCE, MANAGEMENT AND COST IN INTERNATIONAL COMPARISON

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OBJECTIVES: GERD is one of the most common gastrointestinal disorders. Knowledge on epidemiologic data, treatment guidelines and patterns and economic details is limited. **METHODS:** Extensive desktop research was conducted for North America, Western and Eastern Europe and Australia using MEDLINE, EMBASE and Cochrane databases (1995–2004), telephone interviews, Internet searches (2000–2004). For structured search all MESH terms applying to GERD, epidemiologic data, treatment patterns, costs and related issues (22 in total) were used. **RESULTS:** Extensive review of obtained literature revealed 162 articles and other sources of information (websites, telephone contacts) for further evaluation. Prevalence of weekly GERD symptoms ranges from 4% (Canada) to 20% (USA). Population-based prevalence data are lacking for Austria, Germany and Eastern European countries. General recommendations for management of GERD consist of symptom-oriented measures with lifestyle changes and administration of antacids, Proton-Pump-Inhibitors (PPI) or H2-Receptor-Antagonists. Specific guidelines with recommendations on drug treatment exist in all countries except most of Eastern Europe. Treatment patterns widely follow guidelines with variations in drug dosage and administration period. Peer-reviewed literature revealed 20 cost-of-illness studies (16 USA, 1 Canada, 3 Western Europe, 0 Eastern Europe and Australia). In North America total direct cost (TDC) ranged from €360–€800/a (Canada €700/a). Western European cost-of-illness studies exist only for Sweden (TDC €930/a) and Italy (TDC €300/a). From third party payers' perspective main cost drivers are medication (about 40%) and outpatient care (about 60%). **CONCLUSIONS:** Although prevalence of GERD is high, only few studies focus on its economic burden, most of them conducted in the USA. Treatment guidelines show comparatively uniform features in all investigated countries, especially concerning the recommendation of PPI usage. Treatment patterns show wide usage of PPI, except in Eastern Europe where treatment patterns assumably resemble those in Western Europe, probably with limitations due to the countries' health care systems' possibilities.

PGI17

ARTIFICIAL LIVER SUPPORT SYSTEMS—A MEDICAL AND HEALTH ECONOMIC HTA-REPORT

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Artificial liver support systems (ALS) are a new therapeutic approach for patients with acute liver failure (ALF) or acute-on-chronic liver failure (ACLF). Using this technology patients should have a better chance for regaining their own liver function or for successful bridging to transplantation. Treatment costs in Germany are €10–15,000 per patient. **OBJECTIVES:** To determine and summarize the scientific evidence on medical efficacy and economic effectiveness of the use of ALS in patients with ALF or ACLF. **METHODS:** In an extensive systematic literature search in all relevant medical and economic data bases all published studies on ALS were identified and systematically described. All results concerning the treatment of ALF or ACLF were extracted and if possible synthesized to final recommendations. **RESULTS:** Three different artificial liver support systems could be identified. For Biologic-DT® neither of the identified studies reported medical or economic benefits. For Prometheus® no randomized controlled studies reporting medical or economic effects are available. For MARS (Molecular adsorbing recirculating system) for patients with ACLF a significant improvement of clinical parameter and 30d-survival could be demonstrated. First health economic studies with short time horizon report costs per QALY of €60,000 and conclude that prolonging the time horizon would improve cost-effectiveness. All studies show methodological limitations. **CONCLUSION:** The present scientific evidence according to published trials on ALS does not show any medical or economic benefit of the liver support systems BioLogic-DT® and Prometheus®. The limited evidence for the benefit of the system MARS gives hints that ACLF patients might clinically benefit and that cost-effectiveness is acceptable. Future randomized controlled studies with large sample size and health economic models to estimate long term benefits are necessary to confirm these results.

PGI18

META-ANALYSIS OF MULTIPLE TREATMENT COMPARISONS REPORTED AT MULTIPLE FOLLOW-UP TIMES

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OBJECTIVES: The evidence base for cost-effectiveness analyses (CEA) often consists of a series of randomised controlled trials making pair-wise comparisons between several alternative treatments (A vs. B, A vs. C, B vs. D, etc). Furthermore, each trial may report results at one or more, different, follow-up times. In order to obtain unbiased estimates of treatment efficacy, and to produce an appropriate uncertainty analysis in the context of a CEA, any synthesis of the evidence must ensure that the uncertainty structure arising from the pattern of randomisation is correctly captured and propagated. **METHODS:** We studied a set of 41 randomised trials looking at the healing rates of six treatments for gastro-oesophageal reflux disease (GORD). Each trial reported the healing rate at one or more (average 1.8) follow-up times at 4, 6, 8, or 12 weeks. There are a possible 15 pair-wise comparisons between 6 treatments, but, overall, the dataset provides direct information on only 9 of these, 5 at 4 weeks, 4 at 6, 8 at 8 and 6 at 12. We developed a series of hierarchical models that "borrow strength" across the incomplete network of treatment comparisons and also across time points. **RESULTS:** We propose an approach that distinguishes between the model